ARIZONA GAME AND FISH DEPARTMENT
HABITAT PARTNERSHIP PROGRAM
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL

PROJECT INFORMATION

Project Title: Wild Turkey response to forest restoration in northern Arizona.

Project No. 09-702

Region/GMU: FOR2/6B

HPC:

Project Type: Habitat use and effects of forest management

Project Description:
The work proposed here represents a continuation of research currently being conducted cooperatively between the Arizona Game and Fish Department, State of Arizona Department of Emergency and Military Affairs Arizona National Guard, and the National Wild Turkey Federation. This effort is centered on examining turkey response to ongoing ponderosa pine (*Pinus ponderosa)* forest treatments in northern Arizona aimed at restoring these ecosystems to historical conditions. The objectives of this study include an assessment of seasonal home range size, site fidelity, and diurnal and roosting habitat selection pre and post forest treatment. To date, we have monitored daily movements of 11 individual turkeys using GPS transmitters. The funds requested here would allow us to increase our current sample size, thus improving the rigor of management recommendations for wild turkeys in regards to increasingly-prevalent forest restoration.

Requested funds will be used to purchase two additional satellite transmitters and ARGOS uplink.

Wildlife Species to Benefit: Wild Turkey

Possible Funding Partners:

Implementation Schedule:
Beginning: On-going
Completed: Spring 2010

NEPA Compliance: (if applicable)
Completed: Yes ____ No ____
Projected Completion Date:

PROJECT FUNDING

SBG Funds Requested: **$** 10,000

Cost Share Funds: **$** 88,315

Total Project Costs: **$** 98,315

PARTICIPANT INFORMATION

Applicant: Vincent Frary, Research Biologist, Arizona Game and Fish Department, Research Branch
(please print)
Telephone: 928-213-9591

Address: 5000 W. Carefree Highway, Phoenix, AZ 85086

AGFD Contact and Phone No.
(If applicant is not AGFD personnel)

Coordinated with: Zach Reichold, AZ Dept. of Emergency and Military Affairs

Date: 7/24/09

Applicant's signature:

Date: 7/24/09

(revised 7-02-2007)

WAS PROJECT PRESENTED TO THE LOCAL HPC? YES _____ NO ___X___

HAS PROJECT BEEN SUBMITTED IN PREVIOUS YEARS? IF SO WAS IT FUNDED? Yes.

NEED STATEMENT/PROBLEM ANALYSIS:

The wild turkey is a valuable game species which occupies the ponderosa pine (*Pinus ponderosa*) forests of northern Arizona, including Camp Navajo, a facility operated by the Arizona Army National Guard. Ongoing forest restoration treatments on Camp Navajo involve removing accumulated litter and over stocked stands through cutting and burning. Restoration treatments are expected to increase biodiversity and productivity at the herbaceous layer, therefore benefitting some species of wildlife. However, restoration is expected to decrease intra-stand structural diversity and inter-stand heterogeneity for several decades or longer. Considering the increasing interest in restoring ponderosa pine forests to historical conditions, the current lack of information regarding subsequent effects on wild turkeys is problematic. Empirical data are needed on the effects of ecosystem restoration on Wild Turkeys within the ponderosa pine community before decisions are made to restore large areas.

PROJECT OBJECTIVES:

1) Trap a minimum of 6 wild turkeys within the western buffer of Camp Navajo, to monitor long-term movements via GPS PTT transmitters.

2) Measure seasonal home range size, site fidelity, and diurnal and roosting habitat selection of monitored individuals.

3) Determine the influence of forest restoration on turkey home range size, site fidelity, and diurnal and roosting habitat selection.

PROJECT STRATEGIES:

We will capture Wild Turkeys between September 15 and December 30, with the use of rocket nets set over bait stations. A total of 6 turkeys will be fitted with a satellite GPS PTT type backpack-mounted transmitter weighing approximately 100 g and secured with a 5 mm diameter bungee harness (expected transmitter life = 3 years). The transmitters provide 6 locations per day 12 months per year. All locations will be plotted using GIS software. Using data from GPS instrumented birds, we will calculate seasonal home range sizes (i.e. minimum convex polygon, fixed kernel home range), site fidelity, and various movement parameters (e.g. distance between successive locations, daily and monthly movements). Data will be separated as diurnal locations (8:00, 11:00, 14:00, and 17:00) and night locations (20:00 and 23:00). Using restrictive kernel home range estimates (e.g. 25 – 50 % fixed kernel home range estimates) we will identify core use day areas as well as roosting sites. Within the identified seasonal core use areas we will randomly identify a minimum of 20 locations per season per bird. At these points we will collect forest stand structural data using the intensive (Level I) stand exam procedure per standard USDA Forest Service inventory procedures. We will use a variable-radius plot tally of trees using a 10 basal factor-sighting gauge. The diameter at breast height (dbh) or diameter at root crown (drc; for oak and junipers) of stems will be measured to the nearest centimeter with a dbh tape, and recorded by species for each tree in the plot. The branch tally for oaks and junipers will be recorded, as well as the mistletoe index for all measured trees. The height of all trees and length of live crown for ponderosa pine trees will be measured with a hypsometer to the nearest meter. We will tally all trees > 12.7 cm dbh and > 7.6 cm drc within an 15 meter radius about the center of the plot. Canopy cover will be measured at the turkey location using a spherical densitometer. Data from these variable-radius plots will be used to quantify turkey diurnal at roosting habitat selection, and allow for subsequent comparison turkey movements pre and post forest treatment.

PROJECT LOCATION:
The study area is located on the western portion of Army National Guard Post known as Camp Navajo.

LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):
This property is owned and managed by the Arizona Army National Guard.

IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?

HABITAT DESCRIPTION:
The area is located on the Coconino Plateau Basin, north of the Mogollon Rim within the Colorado Plateau Physiographic Province. The topography is variable, with Volunteer Mountain rising to a height of 2,453 m and Volunteer Canyon in the southeast of the study area dropping to approximately 1,400 m. The elevation gradients within the area leads to a diverse plant community of mixed confer species dominated by Douglas-fir (*Pseudotsuga menziesii*) and white fir (*Abies concolor)* in the higher elevations, to ponderosa pine and Gambel's oak (*Quercus gambelii*) dominating the forests in the lower elevations. Also, within areas of poor site potential (i.e., areas dominated by gravelly clay soils and exposed volcanic cinders) there exits pockets of a juniper-pinyon woodland community dominated by three species: alligator juniper (*Juniperus deppeana*), Utah juniper (*Juniperus osteosperma*) and Colorado pinyon pine (*Pinus edulis*).

ITEMIZED USE OF FUNDS:
Budget Request

Satellite Transmitter (2 @ $3700) *Currently have on-hand four functioning transmitters	$7,400
ARGOS uplink (1 @ $2600)	$ 2,600
TOTAL	**$10,000**

LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:
The work proposed here represents a continuation of ongoing research conducted cooperatively between the Arizona Game and Fish Department, State of Arizona Department of Emergency and Military Affairs (AZDEMA) Arizona National Guard, and the National Wild Turkey Federation (NWTF). AGFD is responsible for executing and reporting, while AZDEMA and NWTF provide financial support.

PROJECT MONITORING PLAN:
These data will be used to evaluate turkey seasonal home range size, site fidelity, and habitat selection pre- and post forest treatment.

PROJECT MAINTENANCE: n/a

PROJECT COMPLETION REPORT TO BE FILED BY: Vincent Frary, Research Biologist, Arizona Game and Fish

Department, Research Branch

WATER DEVELOPMENT PROJECTS (see attached worksheet): n/a

TREE SHEARING (AGRA-AXE, PUSH) PROJECTS (see attached worksheet): n/a